

**In the Claims**

1 1. (Currently Amended) A method of fabricating a microelectromechanical system, said  
2 method comprising:

3 providing a substrate comprising a handle layer of silicon, a device layer of silicon and a  
4 sacrificial layer of silicon disposed between the said handle layer and the said device layer, the  
5 handle layer being separated from the sacrificial layer by a first dielectric layer, the sacrificial  
6 layer being separated from the device layer by a second dielectric layer;

7 forming an isolation trench that extends through at least the sacrificial layer, the isolation  
8 trench defining a release area in the sacrificial layer;

9 forming a micromechanical structure in the said device layer by etching the silicon of the  
10 device layer; and

11 removing at least a portion of the said sacrificial layer of silicon underlying the said  
12 micromechanical structure to release the said micromechanical structure for movement.

1 2. (Currently Amended) The A method of fabricating a microelectromechanical system;  
2 ~~as per~~ as claimed in claim 1, wherein the said silicon of the said sacrificial layer is single crystal  
3 silicon.

1 3. (Currently Amended) The A method of fabricating a microelectromechanical system;  
2 ~~as per~~ as claimed in claim 1, wherein ~~said forming step further comprises: forming an the~~  
3 isolation trench ~~that~~ extends through ~~at least~~ the said device layer.

1 **Claim 4 (Cancelled)**

1 5. (Currently Amended) The A method of fabricating a microelectromechanical system;  
2 ~~as per~~ as claimed in claim 14, wherein the said silicon of the said device layer is polysilicon.

**Patent Application Number: 09/921,456**

1           6. (Currently Amended) The A method of fabricating a microelectromechanical system;  
2 ~~as per~~ as claimed in claim 14, wherein ~~the said~~ silicon of ~~the said~~ device layer is single crystal  
3 silicon.

1           **Claim 7 (Cancelled)**

1           8. (Currently Amended) The A method of fabricating a microelectromechanical system;  
2 ~~as per~~ as claimed in claim 14, wherein at least a portion of the sacrificial layer of silicon is  
3 removed by said removing step further comprising:  
4           placing a photoresist layer on top of ~~the said~~ device layer over at least ~~the said~~  
5 micromechanical structure;  
6           forming release etch holes through ~~the said~~ photoresist layer and ~~the said~~ second  
7 dielectric layer; and etching ~~the said~~ sacrificial layer of silicon underlying ~~the said~~  
8 micromechanical structure.

1           9. (Currently Amended) The A method of fabricating a microelectromechanical system;  
2 ~~as per~~ as claimed in claim 8, wherein ~~the said~~ first dielectric layer is used as an etch stop for ~~the~~  
3 ~~said~~ etching of ~~the said~~ sacrificial layer.

1           10. (Currently Amended) The A method of fabricating a microelectromechanical system;  
2 ~~as per~~ as claimed in claim 8, wherein ~~the said~~ second dielectric layer is used as an etch stop for  
3 ~~the said~~ etching of ~~the said~~ sacrificial layer.

1           11. (Currently Amended) The A method of fabricating a microelectromechanical system;  
2 ~~as per~~ as claimed in claim 8, wherein ~~the said~~ isolation trench is used as an etch stop for ~~the said~~  
3 etching of ~~the said~~ sacrificial layer.

1           12. (Currently Amended) The A method of fabricating a microelectromechanical system;  
2 ~~as per~~ as claimed in claim 14, wherein ~~the said~~ handle layer has actuation electrodes formed  
3 thereon.

1           13. (Currently Amended) ~~The A~~ method of fabricating a microelectromechanical system;  
2 ~~as per as claimed in~~ claim 12, ~~said forming step~~ further comprising:  
3           forming via posts extending through at least ~~the said~~ sacrificial layer to contact ~~the said~~  
4 actuation electrodes.

1           14. (Currently Amended) ~~The A~~ method of fabricating a microelectromechanical system;  
2 ~~as per as claimed in~~ claim 13, wherein ~~the said~~ via posts additionally extend through ~~the said~~  
3 device layer.

1           15. (Currently Amended) ~~The A~~ method of fabricating a microelectromechanical system;  
2 ~~as per as claimed in~~ claim 14, wherein actuation electrodes are formed on the bottom of ~~the said~~  
3 sacrificial layer.

1           16. (Currently Amended) ~~The A~~ method of fabricating a microelectromechanical system;  
2 ~~as per as claimed in~~ claim 1, ~~said method~~ further comprising:  
3           bonding a silicon-on-insulator wafer to a handle wafer of silicon to create ~~the said~~  
4 substrate.

1           17. (Currently Amended) A method of fabricating a microelectromechanical system, as  
2 ~~per claim 1, said method further~~ comprising:

3           providing a substrate comprising a handle layer of silicon, a device layer of silicon and a  
4 sacrificial layer of silicon disposed between the handle layer and the device layer;

5           bonding a first silicon-on-insulator wafer to a handle wafer of silicon and removing a  
6 handle layer of ~~the said~~ first silicon on insulator wafer to create ~~the said~~ sacrificial layer; and

7           bonding a second silicon on insulator wafer to ~~the said~~ sacrificial layer and removing a  
8 handle layer of ~~the said~~ second silicon on insulator wafer to create ~~the said~~ device layer;

9           forming a micromechanical structure in the device layer; and

10          removing at least a portion of the sacrificial layer of silicon underlying the  
11 micromechanical structure to release the micromechanical structure for movement.

**Patent Application Number: 09/921,456**

1           18. (Currently Amended) A method of fabricating a microelectromechanical system, as  
2 per claim 1, ~~said method further~~ comprising:

3           providing a substrate comprising a handle layer of silicon, a device layer of silicon and a  
4 sacrificial layer of silicon disposed between the handle layer and the device layer;

5           bonding a first wafer of silicon to a second wafer of silicon and; bonding a third wafer of  
6 silicon to the said first wafer of silicon; ~~and to create the whereby said~~ substrate is created;

7           forming a micromechanical structure in the device layer; and

8           removing at least a portion of the sacrificial layer of silicon underlying the  
9 micromechanical structure to release the micromechanical structure for movement.

1           19. (Currently Amended) The A method of fabricating a microelectromechanical system;  
2 ~~as per as claimed in~~ claim 1, wherein the said micromechanical structure is any one of a micro-  
3 optical device, an inertial sensor, or an actuator.

1           20. (Currently Amended) The A method of fabricating a microelectromechanical system;  
2 ~~as per as claimed in~~ claim 19, wherein the said micro-optical device is a micromirror.

1           21. (Currently Amended) The A method of ~~releasing~~ fabricating a  
2 microelectromechanical ~~structure for movement system as claimed in claim 1, said~~  
3 ~~micromechanical structure etched in a silicon device layer, said method further comprising:~~  
4           etching a the silicon sacrificial layer disposed between the said micromechanical  
5 structure and a the silicon handle layer.

1           22. (Currently Amended) The A method of ~~releasing~~ fabricating a micromechanical  
2 ~~structure for movement system, as per as claimed in~~ claim 21, wherein the said micromechanical  
3 structure is a micromirror.

1           **Claims 23-42 (Cancelled)**